Hepatitis B in Colorado **2011 Surveillance Report**

Cases of Acute and Chronic Hepatitis B in Colorado

Note: This report is published by the Viral Hepatitis Program (VHP), Disease Control and Environmental Epidemiology Division, Colorado Department of Public Health and Environment, Denver Colorado. Data are presented for acute and chronic hepatitis B cases newly reported to CDPHE in 2011



Colorado Department of Public Health and Environment

Hepatitis B

Hepatitis B is a disease that results from an infection with the hepatitis B virus (HBV). HBV is spread through contact with infected blood. This occurs primarily through sex with an infected person or from mother to child during childbirth (perinatal). However, a large proportion of people do not know how they became infected.

HBV infection can range in severity, from a mild illness lasting a few weeks to a serious, lifelong illness. The number of new and chronic infections is on the decline. Data from the National Health and Nutrition Examination Survey indicates that the prevalence of HBV infection is 4.3-5.6% of the population. In 2011, 4.3% of the Colorado population translates to 220,022 residents who have ever been infected with hepatitis B.

Viral hepatitis surveillance in Colorado is primarily based on laboratory reporting of serologic results. Laboratory-based reporting enables the identification of asymptomatic persons infected by the virus as well as those displaying symptoms. In Colorado, the Board of Health requires physicians and other health care providers to report suspected cases of hepatitis B within 7 days, and it requires laboratories to report positive HBV serologic tests within 7 days. Upon receipt of these reports, either electronically, by fax, or via another reporting method, the Viral Hepatitis Program (VHP) uses established case definitions to assign a diagnosis and case status for each patient. Data is entered into the Colorado Electronic Disease Reporting System (CEDRS) where it is available to local or state public health personnel for further investigation of cases.

Acute Hepatitis B

Acute hepatitis B is a short-term illness that occurs within the first six months of infection with HBV. Symptoms are usually mild to moderate, and include fatigue, nausea, vomiting, abdominal pain, jaundice and abnormal liver function tests. Older children and adults are more likely to develop symptoms than younger children. The hepatitis B Igm can be detected in sera and used as a marker of acute infection.

Chronic Hepatitis B

Chronic hepatitis B results when HBV remains in the body after the acute phase of illness. People with a chronic infection do not develop protective antibodies to the hepatitis B surface antigen. Approximately 5% of older children and adults, 25-50% of younger children (aged 1-5 years), and up to 90% of infants will develop chronic hepatitis B. Over time, chronic hepatitis B can result in liver disease, cirrhosis, or cancer. Each year approximately 2,000 to 4,000 people die from diseases related to hepatitis B in the U.S.

Vaccine is available to prevent hepatitis B infection. Hepatitis B vaccination became a school entry requirement in 1997. At that time, the Colorado Board of Health required all day care students age fifteen months through four years of age, kindergarten and seventh grade students to have had three doses of hepatitis B vaccine to attend school. A 12 year old student entering seventh grade in 1997 would have been born in 1985 and be 27 years of age in 2011.

Surveillance Summary

In 2011, a total of 27 cases of acute hepatitis B were reported in Colorado. Table 1 describes the reported cases by gender, age, race/ethnicity, risk factors, and county of residence. Rates include acute and chronic case reports even though up to 10% of acute cases may also be included in the chronic cases. This occurs when an individual retests positive six months following the initial acute diagnosis, and the person is reported as a chronic case following the second test.

Gender

Gender was reported on all but one case. Eighteen (67%) acute cases were reported in men, and 9 (33%) in women. For chronic infections over half of the total 488 reported cases were among men (n=288; 59.0%), while 199 (41.0%) were reported in women (1 case had unknown gender, 0.2%). Surveillance cannot determine the number of men and women tested in Colorado. However, Colorado birth certificate data for 2011 reported that 96% (64,259) of women were screened for hepatitis B during pregnancy as recommended by the Advisory Committee on Immunization Practices of the U.S. Centers for Disease Control and Prevention and the U.S. Preventive Services Taskforce.² All other testing recommendations are based on behavioral risks, clinical risks (i.e. diabetic, immune compromised, other liver disease, etc) or being born in an endemic country.

Age

Table 1 represents the age distribution of acute and chronic hepatitis B cases. Most reported acute infections occurred among persons >25 years of age. Persons >25 years of age are less likely to be immunized for hepatitis B based on a school-entry requirement that began in 1997. The higher incidence of acute infections in people older than 25 years suggests that individuals in these age groups continue to engage in high risk behavior and could benefit from vaccine. For chronic hepatitis B infection, persons 20-39 years of age had the most reported cases (n=242; 49%). Chronic infections are more likely to be diagnosed later in the course of infection when symptoms commonly appear or among women screened during pregnancy.

Race/ethnicity

The majority of acute cases of hepatitis B were reported among White non-Hispanics (n=17; 63%). The highest number of chronic HBV infections were reported among Asian/Pacific Islanders (n=171; 35%). Rates per 100,000 were done using the 2011 estimates from the US Census Bureau, Population Division. Data from Colorado's Perinatal Hepatitis B Prevention Unit indicate that foreign-born pregnant women are significantly more likely to be reported with hepatitis B infection than pregnant women born in the U.S. National data also describes significant disparities in chronic hepatitis B infections by race (McQuillan).

Risk Factors

A subset of risk factor data was added to the 2011 statistics. These data include: injection drug use (IDU), household contact, sex contact, men who have sex with men (MSM), born in endemic country, and perinatal transmission. Others risk factors are collected, but only those reported in the yearly progress report for CDC are included in Table 1. These data were obtained through patient interviews, medical record reviews, or from information provided by a physician, hospital, or other healthcare provider. The VHP collected risk factor information on 17 (63%) acute HBV cases and 247 (50%) chronic cases.

Perinatal

There was one hepatitis B perinatal case reported in Colorado in 2011. Hepatitis B perinatal cases are those who are <2 years of age and were born in the US to HBV infected mothers. The Perinatal Hepatitis B Prevention Unit also case managed 148 reported cases of hepatitis B among pregnant women. Of these, 80 cases were newly reported. The other 68 cases had been reported in previous years but were newly pregnant.

County Distribution

Acute HBV cases were reported in 10 of the 64 Colorado counties. Chronic hepatitis B cases were reported in 24 of the 64 Colorado counties. Counties without reported cases were more likely to be frontier counties (rural areas sparsely populated that are isolated from population centers and services). Incarcerated HBV chronic cases are counted in the "Unspecified" section under Colorado Department of Corrections (CDOC) and Federal Correctional Institute (FCI).

Figure 1 is a map describing the rate distribution of hepatitis B per 100,000 county populations in Colorado. The rate is calculated using the Estimated 2011 Census figures from the Colorado Division of Local Government, Demography section.

Table 1: Reported Hepatitis B Cases by Case Status, Sex, Age, and Race, Colorado, 2011

	Acute HBV Cases		Chronic HBV Cases †		All HBV Cases	
	Number	Percent of Total	Number	Percent of Total	Total	Rate of Reported Cases/ 100,000 ‡
Total	27		488		515	10.1
Case Status						
Confirmed	23	85.2%	182	37.3%	205	4.0
Probable	4	14.8%	307	37.3%	311	6.1
Suspect	0	0.0%	1	37.3%	1	0.0
Gender						
Female	9	33.3%	199	40.8%	208	8.1
Male	18	66.7%	288	59.0%	306	12.0
Unknown	0	0.0%	1	0.2%	1	
Age (years)						
0-4	0-4	0	0.0%	5	1.0%	5
5-9	5-9	0	0.0%	4	0.8%	4
10-19	10-19	0	0.0%	26	5.3%	26
20-29	20-29	1	3.7%	110	22.5%	111
30-39	30-39	5	18.5%	126	25.8%	131
40-49	40-49	9	33.3%	99	20.3%	108
50-59	50-59	5	18.5%	75	15.4%	80
60+	60+	7	25.9%	41	8.4%	48
Unknown	Unknown	0	0.0%	2	0.4%	2
Race/Ethnicity***						
Hispanic	3	11.1%	20	4.1%	23	2.2
White non-						
Hispanic	15	55.6%	44	9.0%	59	1.7
Black non- Hispanic	1	3.7%	74	15.2%	75	38.5
American Indian	0	0.0%	0	0.0%	0	0.0
		0.0%	0	0.0%	0	0.0
Asian/Pacific Islander	0	0.0%	172	35.2%	172	115.9
Multiple	0	0.0%	3	0.6%	3	3.0
Other/Missing/		0.070	3	0.070	ر	3.0
Unknown **	8	29.6%	175	35.9%	183	

Table 1a: Total Number of Pregnant Women Reported N = 148					
Previous Newly case/new Reported pregnancy					
80	68				
1 perinatal HBV Case reported					

	Born Before Jan.1, 1986	Born after Jan. 1, 1986
Acute	27	0
Chronic	393	93
Total	420	93
Rate per 100,000 *	12.7	4.9

[†]Chronic cases may include 5%-10% of those cases that were reported as acute cases in the same year

‡Rates were calculated for everything except race and ethnicity using the 2011 Census Estimates from the Demography Section, Colorado Division of Local Government:

http://www.colorado.gov/cs/Satellite/DOLA-Main/CBON/1251590805419. Rates calculated for counties with a small number of reported cases should be interpreted with caution.

Table 2: Reported Hepatitis B Cases by Risk Factor, and Percentage of Cases Reporting the Risk Factor, Colorado, 2011*

	Acute HBV Cases		Chronic HBV Cases †		All HBV Cases	
		Percent		Percent		
	Number	of Total	Number	of Total	Total	
Total	27	Total	488	Total	515	
IVDU	21		400		313	
Yes	1	3.7%	9	1.8%	10	
No	15	55.6%	103	21.1%	118	
Unknown	13	33.0%	145	29.7%	146	
Missing	10	37.0%	231	47.3%	241	
Household Co		37.0%	231	47.370	241	
		0.00/	7	1 40/	7	
Yes	0	0.0%		1.4%	7	
No	13	48.1%	215	44.1%	228	
Unknown	1	3.7%	19	3.9%	20	
Missing	13	48.1%	247	50.6%	260	
Sex Contact						
Yes	1	3.7%	8	1.6%	9	
No	12	44.4%	214	43.9%	226	
Unknown	1	3.7%	19	3.9%	20	
Missing	13	48.1%	247	50.6%	260	
MSM						
Yes	5	27.8%	11	3.8%	16	
No	7	38.9%	11	3.8%	18	
Unknown	2	11.1%	117	40.6%	119	
Missing	4	22.2%	149	51.7%	153	
Born in						
Endemic Area						
Yes	1	3.7%	204	41.8%	205	
No	17	63.0%	51	10.5%	68	
Unknown	5	18.5%	131	26.8%	136	
Missing	4	14.8%	102	20.9%	106	

[†]Chronic cases may include 5%-10% of those cases that were also reported as acute cases in the same year

^{*}Rates per 100,000 were calculated using the 2012 Census Estimates from the Demography Section, Colorado Division of Local Government: https://dola.colorado.gov/demog_webapps/pag_category.jsf

^{**}Of the total other/missing/unknown cases, 30 cases had 'White' marked as race but no ethnicity; 11 cases had 'Black' marked as race but no ethnicity.

^{***} Rates per 100,000 were calculated using the U.S. Census Bureau, Population Division, Annual Estimates of the Resident Population by Sex, Age, Race, and Hispanic Origin for the United States and States: April 1, 2010 to July 1, 2012, http://www.census.gov/popest/data/index.html. Rates calculated for counties with few cases and small populations should be interpreted with caution.

^{*}Risk factor categories are not mutually exclusive

Table 3: Number and Percentage of Reported Acute and Chronic Hepatitis B Cases by County of Residence, Colorado, 2011

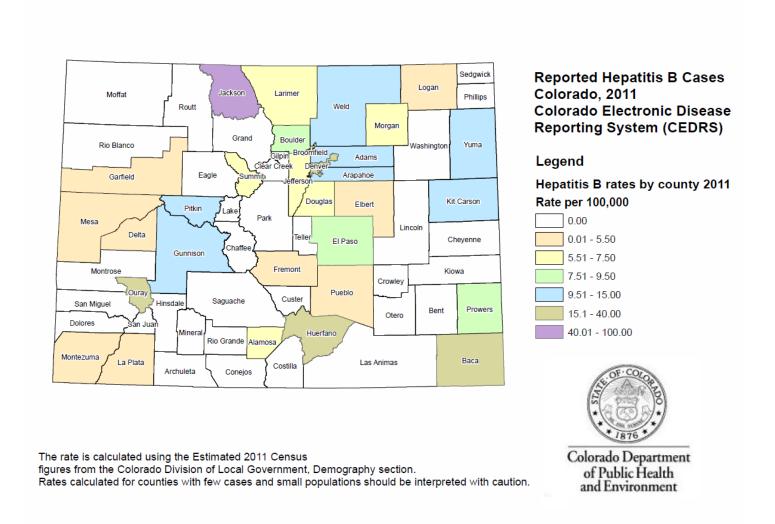
	Acute HBV Cases		Chronic HBV Cases †		All HBV Cases		
	Number	Percent of Total	Number	Percent of Total	Total	Rate of Reported Cases/ 100,000 ‡	
Total	27	Total	488	Total	515	100,000 +	
County of Residence							
Adams	1	3.7%	46	9.4%	47	10.4	
Alamosa	0	0.0%	1	0.2%	1	6.4	
Arapahoe	4	14.8%	114	23.3%	118	20.2	
Archuleta	0	0.0%	0	0.0%	0	0.0	
Baca	0	0.0%	1	0.2%	1	26.4	
Bent	0	0.0%	0	0.0%	0	0.0	
Boulder	0	0.0%	26	5.3%	26	8.7	
Broomfield	0	0.0%	2	0.4%	2	3.5	
Chaffee	0	0.0%	0	0.0%	0	0.0	
Cheyenne	0	0.0%	0	0.0%	0	0.0	
Clear Creek	0	0.0%	0	0.0%	0	0.0	
Conejos	0	0.0%	0	0.0%	0	0.0	
Costilla	0	0.0%	0	0.0%	0	0.0	
Crowley	0	0.0%	0	0.0%	0	0.0	
Custer	0	0.0%	0	0.0%	0	0.0	
Delta	1	3.7%	0	0.0%	1	3.3	
Denver	7	25.9%	93	19.0%	100	16.1	
Dolores	0	0.0%	0	0.0%	0	0.0	
Douglas	1	3.7%	20	4.1%	21	7.2	
Eagle	0	0.0%	0	0.0%	0	0.0	
Elbert	0	0.0%	1	0.2%	1	4.3	
El Paso	5	18.5%	49	10.0%	54	8.5	
Fremont	0	0.0%	0	0.0%	0	0.0	
Garfield	0	0.0%	1	0.2%	1	1.8	
Gilpin	0	0.0%	0	0.0%	0	0.0	
Grand	0	0.0%	0	0.0%	0	0.0	
Gunnison	0	0.0%	0	0.0%	0	0.0	
Hinsdale	0	0.0%	0	0.0%	0	0.0	
Huerfano	0	0.0%	1	0.2%	1	15.4	
Jackson	0	0.0%	1	0.2%	1	73.2	
Jefferson	4	14.8%	33	6.7%	37	6.9	
Kiowa	0	0.0%	0	0.0%	0	0.0	
Kit Carson	0	0.0%	0	0.0%	0	0.0	
Lake	0	0.0%	0	0.0%	0	0.0	
La Plata	0	0.0%	0	0.0%	0	0.0	
Larimer	0	0.0%	18	3.7%	18	5.9	
Las Animas	0	0.0%	0	0.0%	0	0.0	

Lincoln	0	0.0%	0	0.0%	0	0.0
Logan	0	0.0%	1	0.2%	1	4.5
Mesa	1	3.7%	3	0.6%	4	2.7
Mineral	0	0.0%	0	0.0%	0	0.0
Moffat	0	0.0%	0	0.0%	0	0.0
Montezuma	0	0.0%	1	0.2%	1	3.9
Montrose	0	0.0%	0	0.0%	0	0.0
Morgan	0	0.0%	2	0.4%	2	7.1
Otero	0	0.0%	0	0.0%	0	0.0
Ouray	0	0.0%	1	0.2%	1	23.0
Park	0	0.0%	0	0.0%	0	0.0
Phillips	0	0.0%	0	0.0%	0	0.0
Pitkin	0	0.0%	2	0.4%	2	11.7
Prowers	0	0.0%	0	0.0%	0	0.0
Pueblo	2	7.4%	5	1.0%	7	4.4
Rio Blanco	0	0.0%	0	0.0%	0	0.0
Rio Grande	0	0.0%	0	0.0%	0	0.0
Routt	0	0.0%	0	0.0%	0	0.0
Saguache	0	0.0%	0	0.0%	0	0.0
San Juan	0	0.0%	0	0.0%	0	0.0
San Miguel	0	0.0%	0	0.0%	0	0.0
Sedgwick	0	0.0%	0	0.0%	0	0.0
Summit	0	0.0%	2	0.4%	2	7.2
Teller	0	0.0%	0	0.0%	0	0.0
Washington	0	0.0%	0	0.0%	0	0.0
Weld	1	3.7%	27	5.5%	28	10.8
Yuma	0	0.0%	0	0.0%	0	0.0
Unspecified	0	0.0%	37	7.6%	37	

Table 3a: Cases with Unspecified Cases						
Total Chronic HBV Cases						
	Number	%				
CDOC	21	56.8%				
FCI	4	10.8%				
Unknown	12	32.4%				

 $[\]dagger$ Chronic cases may include 5%-10% of those cases that were also reported as acute cases in the same year

‡Rates were calculated for everything except race and ethnicity using the 2011 Census Estimates from the Demography Section, Colorado Division of Local Government: http://www.colorado.gov/cs/Satellite/DOLA-Main/CBON/1251590805419. Rates calculated for counties with a small number of reported cases should be interpreted with caution.



- 1. McQuillan GM, Coleman PJ, Kruszon-Moran D, Moyer LA, Lambert SB, Margolis HS. Prevalence of hepatitis B virus infection in the United States: the National Health and Nutrition Examination Surveys, 1976 through 1994. Am J Public Health 1999;89:14-8.
- 2. U.S. Centers for Disease Control and Prevention . A Comprehensive Immunization Strategy to Eliminate Transmission of Hepatitis B Virus Infection in the U.S.; Recommendations of the Advisory Committee on Immunization Practices (ACIP); Part 1: Immunization of Infants, Children, and Adolescents. Morbidity and Mortality Weekly Report 2005;54.